BEFORE
THE ILLINOIS COMMERCE COMMISSION

In the Matter of the Petition of Gallatin River Communication L.L.C. d/b/a CenturyLink for Arbitration of Interconnection Rates and Terms And Conditions with NTS Services Corp. Pursuant to Section 252(b)of The Telecommunications Act of 1996	))))))	Docket No. 11-0567

PUBLIC DIRECT TESTIMONY
OF
CHRISTY V. LONDERHOLM

ON BEHALF OF

GALLATIN RIVER COMMUNICATIONS L.L.C.

D/B/A

CENTURYLINK

EXHIBIT 2.0

AUGUST 17, 2011

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I. INTRODUCTION AND QUALIFICATIONS

Q. Please state your name, business address, employer, and current position.

A. My name is Christy V. Londerholm. My business address is 5454 West 110th Street, Overland Park, Kansas 66211. I am employed as Director, Regulatory Operations for CenturyLink.

Q. On whose behalf are you testifying?

A. I am testifying on the behalf of Gallatin River Communications, L.L.C. (hereafter "CenturyLink"), the Illinois incumbent local exchange company ("ILEC") of CenturyLink, Inc.

Q. Please summarize your qualifications and work experience.

A. I received a Bachelor of Science degree in Mathematics from the University of Missouri – Kansas City in 1990. In 2005, I received a Masters of Arts in Finance from Webster University – Kansas City.

I began my career with Sprint in 1998 as a Project Manager in the Customer Service Organization's Decision Support group. In this role, I worked directly with Sprint's financial reporting and operational systems. My responsibilities included projects associated with Outside Plant Engineering and Construction, Labor, Installation and Repair metrics, and General Accounting.

In 2002, I was promoted to the position of Costing Manager. In that role, I was responsible for developing and maintaining programming necessary to process

Sprint's Economic Cost Model. I was responsible for enhancing and assisting in the investment development and expense development of the Model. I facilitated the processing and analyzed the results for Sprint's Total Element Long Run Incremental Cost ("TELRIC"), Total Service Long Run Incremental Cost ("TSLRIC"), Switched Access, Reciprocal Compensation, and Basic Service Studies. I performed analyses on external cost models and business cases presented to Sprint.

In 2005, I was promoted and given responsibility for Sprint's Loop Costing Module and Expense Modules. These responsibilities include input analysis, algorithm development, and output validation for these Sprint in-house built modules. In May of 2006, the Local Telephone Division ("LTD") of Sprint was spun off into a stand-alone company, Embarq. In 2008, with the merger of Embarq and CenturyTel, I was promoted to the position of Director, Economic Costing and given responsibility for all aspects of developing economic costs within Finance. With CenturyLink's merger with Qwest earlier this year, my role changed to representing the economic cost results for special projects and in regulatory proceeding such as the instant case.

Q. Have you previously testified before other Public Utility Commissions?

A. Yes. I have previously testified before state regulatory commissions in Texas, Nevada, Florida, Ohio and Georgia.

II. PURPOSE AND SUMMARY OF TESTIMONY

Q. What is the purpose of your testimony?

A. My testimony addresses the cost study detail that underlies the two unresolved rate issues stemming from the negotiation for a new interconnection agreement ("ICA") between NTS Services Corp. ("NTS") and CenturyLink. Specifically I sponsor the Total Element Long Run Incremental Cost (TELRIC) study on behalf of CenturyLink for the unbundled network elements ("UNEs") in dispute, 2-wire Loops and DS1 Loops. My testimony will demonstrate the proposed TELRIC rates for these UNEs as produced by CenturyLink's cost study and as shown in Table 1 below are just and reasonable and should be adopted by this Commission.

Table 1

2-wire Loop	Monthly Price
Band 1	$ 26.85
Band 2	$ 52.83
Band 3	$ 106.72
DS-1 Loop	Monthly Price
Band 1	$ 121.97
Band 2	$ 282.16
Band 3	$ 618.79

Q. What prices for 2-wire Loops and DS-1 Loops does NTS currently pay?

A. The table below shows the current contract amount that NTS agreed to in 2006 as well as the cost proposed by NTS for the contract under negotiation.

Table 2

[Begin Confidential]

NTS	Current Interim Rate	Proposed by NTS in this Docket	Number of Loops Purchased (March 2011)
2 Wire			
DS1			

[End Confidential]

Q. Please describe your experience in the negotiations of loop rates with NTS?

A. I attended several conference calls with NTS in an effort to reach agreement on the unbundled 2-wire and DS-1 loop prices. I spent many hours prior to each call preparing schedules to help explain the process and results with the desire that NTS would bring substantive counter explanations or prepared schedules where it specifically found fault. I would have welcomed such. However, in the end, NTS never produced a single input number for me to evaluate against my own. The final cost NTS presented to CenturyLink for 2-wire loops and DS1 loops ($12.50 and $99, respectively) are extremely below what I know to be the cost for small wire centers, and below what other jurisdictions have approved within the banding of costs for wire centers of the same size. It was therefore apparent to me that we would not reach agreement through negotiations.

Q. Please summarize your direct testimony

A. I begin my testimony by discussing CenturyLink's TELRIC cost study for 2-wire Loops and DS1 Loops and how the inputs and methodology comply with the costing standards established by the FCC and by this Commission[1], therefore

[1] Illinois Administrative Code Section 790.340 Pricing

producing results that are just and reasonable. I will show the rigor of CenturyLink's UNE loop modeling process and how it complies with the FCC's forward-looking cost requirements for setting the prices disputed in this arbitration. Next I will discuss specific facts that demonstrate the justness and reasonableness of CenturyLink's TELRIC results. I conclude my testimony with a summary of how CenturyLink's cost study methodology and banding for 2-wire Loops and DS1 Loops complies with the FCC's requirements for establishing TELRIC UNE costs, thereby showing why this Commission should find CenturyLink's prices for 2-wire Loops and DS1 Loops just and reasonable.

Q. Other than your direct testimony, which is submitted as Exhibit 2.0, do you have other exhibits included to support the cost study for 2-wire Loops and DS1 Loops?

A. Yes. Exhibit 2.1 Cost Study Narratives explains the model methodology for the Annual Charge Factor, the Other Direct Cost and Common Cost Factors, and the Loop Module. The electronic version of filing documents with the Commission does not necessarily allow for full review of all study detail. The detail is available in their native format upon request. Moreover, CenturyLink avails itself to the Commission to answer and explain any area where assistance is requested.

III. CENTURYLINK'S TELRIC STUDY

Q. What constitutes an appropriately developed TELRIC study?

A. The FCC adopted rules that require rates for UNEs to be based on forward-looking economic costs. The basic rule is contained in 47 C.F.R §51.505 and in general states that the forward-looking economic cost of a UNE is the sum of the TELRIC of that UNE, plus a reasonable allocation of forward-looking common costs.

The Illinois Administrative Code under Title 83; Chapter 1, Subchapter f, Part 79, Section 790.340 Pricing, states:

> "An ILEC's rates for interconnection, unbundled network elements, and collocation (collectively "components") for purposes of pricing components under Sections 790.310, 790.320, and 790.330, shall equal the forward-looking economic costs of the component, where the forward-looking economic costs equals the sum of the total element long-run incremental cost of the component and a reasonable allocation of forward-looking joint and common costs, as defined by the FCC and determined by the Commission."

For the purposes of my testimony, it is sufficient to describe TELRIC as requiring a determination of the per unit cost of the 2-wire Loops and and DS1 Loops based on the total quantity of demand for those elements, combined with the use of the most efficient telecommunications technology currently available and the lowest cost network configuration or design encompassing the ILEC's existing wire centers. In simple terms, TELRIC methodology develops a unit cost for a total replacement network utilizing current network architecture, current cost of equipment, and current construction techniques and costs. There are other

components of the FCC's forward-looking costs rules, but I have paraphrased the portions of the FCC rule § 51.505 that are most relevant to the subjects in my testimony. Below, in the Expenses portion of my testimony, I also discuss in more detail the FCC's requirements for a reasonable allocation of common costs.

Q. Please describe the approach used by CenturyLink in performing TELRIC studies.

A. CenturyLink uses a consistent approach in performing TELRIC studies for the unbundled loops. The following steps generally describe the TELRIC study methodology:

1. Determine Network Design

The study begins with a determination of the forward-looking, most efficient network architecture. The network design is based on existing wire center locations, as directed in the FCC First Report and Order[2], and reflects currently available technology that is appropriate and efficient for current and reasonably foreseeable demand levels.

2. Determine Forward-Looking Installed Cost

[2] First Report and Order, *In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, 11 FCC Rcd 15499, ¶685(rel August 8, 1996)("*First Report and Order*")("We, therefore, conclude that the forward-looking pricing methodology for interconnection and unbundled network elements should be based on costs that assume that wire centers will be placed at the incumbent LEC's current wire center locations, but that the reconstructed local network will employ the most efficient technology for reasonably foreseeable capacity requirements.")

Using CenturyLink's current vendor material costs and labor rates specific to CenturyLink's serving area, the incremental installed costs for all investment required to build a functioning unbundled network element are determined.

3. Develop Capital and Expense Costs

Capital and Expense Costs reflect the total cost of owning and operating a specific type of asset. They are developed at the FCC account level and include the annual cost of depreciation, a return on investment, income taxes, maintenance expenses, network operations expense (testing, monitoring), and other taxes. The forward-looking, efficient levels of direct maintenance, network operations expense and other taxes are developed using CenturyLink's actual experience with owning and operating the associated forward-looking technologies in Illinois.

4. Determine Reasonable Contribution to Common Costs

The FCC *First Report and Order* provides that the price of unbundled elements should include a reasonable allocation of common costs[3]. Accordingly, CenturyLink includes a contribution to common costs in its TELRIC study results by calculating a percentage-loading factor which is applied uniformly to all elements of the TELRIC results.

[3] *First Report and Order*, ¶620 ("They may set prices to permit recovery of a reasonable share of forward-looking joint and common costs of network elements.")

COMPLIANCE WITH THE FCC'S FORWARD-LOOKING COST REQUIREMENT

Q. Does the CenturyLink loop modeling methodology comply with the FCC's TELRIC cost standards?

A. Yes. The FCC's TELRIC standard can be summarized as requiring a determination of the per unit cost of an element based on the total quantity of demand for that element, combined with the use of the most efficient telecommunications technology currently available and the lowest cost network configuration or design, encompassing the ILEC's existing wire centers.

Paragraph 690 of the FCC's First Report and Order states:

> The increment that forms the basis for a TELRIC study shall be the entire quantity of the network element provided. As previously stated, all costs associated with providing the element shall be included in the incremental cost. Only forward-looking, incremental costs shall be included in a TELRIC Study. Costs must be based on the incumbent LEC's existing wire center locations and most efficient technology available.

CenturyLink's UNE loop modeling methodology satisfies the FCC's TELRIC requirements in the following ways:

1. Demand: Using CenturyLink's company billing records as a source for demand amount meets the TELRIC criterion of the "entire quantity of the element provided." Thus, all retail as well as wholesale demand for the element in question is included. The element for loop demand is each type of loop currently being served in CenturyLink's Illinois network. The customer demand

and locations are used to design the network in the Geographic Module, to determine investments in the Loop Module, and to calculate per unit de-averaged unbundled loop prices in the Loop Summary Module.

2. Network Design: CenturyLink's reconstructed network modeling employs a forward-looking, most efficient, least-cost network design. This design, as used in the Geographic Module, is based on existing wire center locations, as directed by the FCC[4], and reflects the most efficient currently available technology. The network design carries over into the Loop Module when determining material usage such as cable type (fiber or copper), cable size efficiencies and electronics configurations. As described above, these determinations are driven by design and engineering considerations that reflect a least cost network configuration for a fully functional loop.

3. Forward-Looking Installed Cost: The Loop Module and Loop Summary Module use forward-looking vendor material costs and labor rates specific to CenturyLink to develop the installed costs for all investment required to build a functioning unbundled loop. These material costs and labor rates reflect the forward-looking

[4] *First Report and Order*, ¶685.

costs that CenturyLink reasonably expects to incur in the long run. In addition, these material costs and labor rates reflect efficient levels of operation by CenturyLink in meeting the total current and reasonably foreseeable demand for loops.

Q. What is the result produced by the CenturyLink model for the average loop investment for 2-wire Loops and DS1 Loops?

A. Table 3 below shows the breakdown by type of plant for these loop types. I have included the breakdown for the Band 1 loop as well since it is most at issue in this proceeding.

Table 3

[Begin Confidential]

A	B	C	D	F	G	H
Row						
		2-Wire Voice Statewide Investment	Investment Per 2-Wire Loop		2-Wire Voice Band 1 Investment	Investment Per 2-Wire Loop Band 1
10	Lines					
11						
12	Aerial Copper					
13	Buried Copper					
14	Underground Copper					
15	Aerial Fiber					
16	Buried Fiber					
17	Underground Fiber					
18	Poles					
19	Conduit					
20	Aerial Drop					
21	Buried Drop					
22	Total OSP Investment					
23	Circuit Electronics					
24	Central Office Terminating					
25						
26	NID					
27	Total Investment					

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A	B	C	D	E	F	G
Row						
		DS1 Statewide Investment	Investment Per DS1 Loop		DS1 Band 1 Investment	Investment Per DS1 Loop Band 1
10	Lines					
11						
12	Aerial Copper					
13	Buried Copper					
14	Underground Copper					
15	Aerial Fiber					
16	Buried Fiber					
17	Underground Fiber					
18	Poles					
19	Conduit					
20	Aerial Drop					
21	Buried Drop					
22	Total OSP Investment					
23	Circuit Electronics					
24	Central Office Terminatin					
25						
26	NID					
27	Total Investment					

[End Confidential]

CENTURYLINK EXPENSE MODELING

Q. How does CenturyLink model expenses for TELRIC purposes?

A. CenturyLink's TELRIC modeling for expenses uses a combination of an Annual Charge Factor ("ACF") and the Other Direct and Common ("ODC") expenses. The ACF is a factor that converts the loop investment amount into an annual recurring cost that includes investment recovery through forward-looking economic depreciation lives, cost of capital, ad valorem taxes, and direct maintenance expenses. The ODC is a factor for the direct network operations and support expenses. The Other Direct expense factor is developed and added to the

ACF to arrive at a Total Economic ACF. The Common Factor provides the contribution to recover common costs. A monthly recurring cost is obtained by applying these factors to investment and dividing the annual recurring cost by twelve.

Q. What direct expenses are included in CenturyLink's TELRIC study?

A. The forward-looking direct expense estimates in CenturyLink's UNE cost study fall into two categories. The first category is Maintenance Expenses. Maintenance Expenses are the expenses directly attributable to maintenance of a specific type of modeled plant investment underlying the various UNEs (e.g. buried copper cable maintenance, digital circuit equipment maintenance). For example, the cost to repair a damaged buried cable segment is directly attributable to buried cable investment and influences the related estimate of direct maintenance cost. The second category is Other Direct Network Operations and Support Expenses. These are non-maintenance expenses but are directly related to capital investments underlying UNEs (e.g. circuit engineering, cable pair record maintenance, trunk engineering). These activities, such as network testing and monitoring, and power consumption by network facilities, directly support the network. Also included in these expenses are direct customer service activities such as customer inquiry and billing, and direct product costs (e.g. product management).

1. <u>Direct Maintenance Expense Development</u>

The direct maintenance expenses associated with UNE capital investments are applied in the UNE cost study process by including a direct maintenance expense component in the Annual Charge Factor. Using the relationship of Illinois-specific 2010 direct recurring maintenance expenses to the associated gross capital investment, the direct maintenance expense were developed. This relationship reflects current and efficient levels of maintenance expense by plant type that is then applied to the forward-looking efficient modeled investment.

2. Other Direct Network Operations and Support Expense Development

In the UNE cost study process it is necessary to reflect forward-looking direct expenses beyond the direct maintenance expenses described above. CenturyLink identifies the forward-looking direct expenses such as traffic engineering or testing functions and develops loading relationships to the applicable UNE. The forward-looking TELRIC UNE investments are used to develop the other direct expense loading percentages, thus assuring a forward-looking level of expense estimate. The forward-looking, efficient levels of direct maintenance, network operations expense and other taxes are developed using CenturyLink's actual experience with owning and operating the associated forward-looking technologies in Illinois.

As required by the FCC's TELRIC rules, CenturyLink has predicted the customer operation expenses of a 100% wholesale business entity through an input into the ODC study. CenturyLink has identified the FCC account level expenses for product management, sales, advertising and customer service expenses as areas that

have some opportunity for reduction when modeling a 100% wholesale TELRIC construct. CenturyLink's input value of a **[Begin Confidential] [End Confidential]** reduction of the current level of expenses in these accounts assumes a liberal allowance for retail operations.

COMMON EXPENSES

Q. What common cost expenses are included in CenturyLink's TELRIC Study?

A. Common expenses are costs associated with operating the company as a whole. These expenses are not solely attributable to any specific portion of the network (e.g. loop, transport, switching). Rather these costs are common to the overall construction and operation of the entire network. For example, salaries of accounting and information technology personnel are necessary for the operations of the company but have no direct association with loop plant.

Common Expense Methodology

Common costs such as furniture, office equipment, general purpose computers and corporate operations are also developed in the ODC study process. The FCC acknowledged common costs as a non-direct expense that requires allocation. Common costs are not scalable or volume sensitive. As demand increases or decreases, the aggregate common costs are not directly influenced. CenturyLink calculates a common cost factor using the current common costs in Illinois and dividing by Illinois TELRIC annual expenses. This factor is then applied back to

the individual TELRIC annual expenses to allow for recovery of common costs in the MRC.

COST OF CAPITAL

Q. Why is the cost of capital utilized in CenturyLink's UNE cost studies?

A. CenturyLink's inclusion of cost of capital is consistent with Section 252(d) (1) of the Telecommunications Act of 1996 (the "Act") which explicitly states that rates for interconnection and access to unbundled network elements "may include a reasonable profit." It is also consistent with the FCC's *First Report and Order* which states that the concept of reasonable or "normal" profit is embodied in forward-looking costs, because the forward-looking direct cost of a network element includes "the forward-looking costs of capital (debt and equity) needed to support investments required to produce a given element."[5] Furthermore, the *First Report and Order* states that the forward-looking cost of capital "is equal to a normal profit"[6]

Q. How does CenturyLink define a forward-looking cost of capital?

A. A forward-looking cost of capital, as opposed to an embedded or historical cost of capital, incorporates market-based values, as opposed to book values, in both its cost estimates and its capital structure. Of course, this does not suggest that actual

[5] *First Report and Order*, ¶691.
[6] Id. at ¶700.

information should not be used to calculate the forward-looking cost of capital. Rather, existing information should be used in the correct context to obtain the best estimate of a forward looking cost of capital.

In keeping with the forward-looking nature of the costing methodology required for unbundled elements, CenturyLink used weighted average cost of capital of **[Begin Confidential End Confidential].** The composition of the capital structure is **[Begin Confidential [End Confidential]** equity and **[Begin Confidential] [End Confidential]** debt; with cost of equity at **[Begin Confidential] [End Confidential]**; and cost of debt of **[Begin Confidential] [End Confidential]**.

DEPRECIATION

Q. Please describe the depreciation inputs used to develop CenturyLink's forward-looking cost of UNEs.

A. The FCC's pricing requirements for unbundled network elements require the depreciation component of TELRIC be based on forward-looking economic lives of the underlying UNE asset categories.[7] Accordingly, CenturyLink has developed forward-looking economic lives for all UNE asset categories and utilized these lives in its UNE cost studies.

[7] *First Report and Order*, ¶703.

Q. Did you use the cost of capital inputs and depreciation lives inputs as prescribed by the FCC?

A. No. The input values for the CenturyLink cost study are those developed by CenturyLink. The FCC input values were developed well over 10 years ago for single national numbers not company specific numbers. For example, the cost of capital used in the CenturyLink results is **[Begin Confidential] [End Confidential]** than the 11.25% used by the FCC as recent as 2010. Table 4 below shows the CenturyLink Economic Depreciation input values.

Table 4

[Begin Confidential]

	A	B	C	D
Row	Description	Economic Life (Years)	Salvage Value
6	Poles		
7	Aerial Copper		
8	Aerial Fiber		
9	Aerial Copper Drop		
10	Underground Copper		
11	Underground Fiber		
12	Buried Copper		
13	Buried Fiber		
14	Buried Copper Drop		
15	Conduit		
16	Digital/Fiber Circuit		
17	Land		
18	Building		

[End Confidential]

Q. What are the results from your Expense Modules and the application to the 2-wire Loops and DS1 Loops?

A. Tables 4 and 5 below show the final ACF, component pieces of the ACF and the Common Cost Factor and the application to the Band 1 Loop Investment.

Table 4

[Begin Confidential]

Annual Charge Factor and Common Cost Application - 2-Wire Band 1 Loops

Row	Plant	ACF-2010	Total Monthly Cost		Total Economic Rate of Deprec		Income Tax + Prop Tax	Maint. Expense	Other Direct
29									
30	Aerial Copper								
31	Buried Copper								
32	Underground Copper								
33	Aerial Fiber								
34	Buried Fiber								
35	Underground Fiber								
36	Poles								
37	Conduit								
38	Aerial Drop								
39	Buried Drop								
40	Total OSP Investment								
42	Circuit Electronics								
43	CO Terminating								
44	NID								
45	Total Cost								
46									
47	Common Cost								
48	Cost with Common Cost								

	Plant		Per Unit Monthly Cost		Total Economic Rate of Deprec		Income Tax + Prop Tax	Maint. Expense	Other Direct
50									
51	Aerial Copper								
52	Buried Copper								
53	Underground Copper								
54	Aerial Fiber								
55	Buried Fiber								
56	Underground Fiber								
57	Poles								
58	Conduit								
59	Aerial Drop								
60	Buried Drop								
61	Total OSP Investment								
62									
63	Circuit Electronics								
64	CO Terminating								
65	NID								
66	Total Cost before Common								
68	Common Cost								
69	Cost with Common Cost								

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A	B	C	D	E	F	G	H	I	J
Row									
28	Annual Charge Factor and Common Cost Application - DS1 Band 1 Loops								
29	Plant	ACF-2010	Total Monthly Cost		Total Economic Rate of Deprec		Income Tax + Prop Tax	Maint. Expense	Other Direct
30	Aerial Copper								
31	Buried Copper								
32	Underground Copper								
33	Aerial Fiber								
34	Buried Fiber								
35	Underground Fiber								
36	Poles								
37	Conduit								
38	Buried Drop								
39	Total OSP Investment								
41	Circuit Electronics								
42	CO Terminating								
43	NID								
44	Total Cost								
46	Common Cost								
47	Cost with Common Cost								

50	Plant		Per Unit Monthly Cost		Total Economic Rate of Deprec		Income Tax + Prop Tax	Maint. Expense	Other Direct
51	Aerial Copper								
52	Buried Copper								
53	Underground Copper								
54	Aerial Fiber								
55	Buried Fiber								
56	Underground Fiber								
57	Poles								
58	Conduit								
59	Buried Drop								
60	Total OSP Investment								
62	Circuit Electronics								
63	CO Terminating								
64	NID								
65	Total Cost								
67	Common Cost								
68	Cost with Common Cost								

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[End Confidential]

COST STUDY EFFICIENCIES

Q. **Please summarize how the application of the CenturyLink cost study methodology complies with the FCC TELRIC and ICC pricing rules.**

A. CenturyLink's UNE costs are modeled using least-cost with currently available technology. The Carrier Serving Area ("CSA")[8] network design results in UNE Loop costs modeled on a network redesign, and reconstruction, which reflects greater use of lower cost fiber cable vs. embedded copper cable.

Each equipment item e.g. Digital Loop Carriers ("DLC"), Cross Connects, Cables, Terminals; is designed and sized to a capacity to achieve efficiency to meet the total demand for services at the locations served by those equipment items. This introduces a substantial degree of efficiencies that can never be achieved in the embedded network. This modeled efficiency gain has at its root the perfect 20/20 hindsight regarding exact customer locations, and demand for services at those locations, underlying the TELRIC modeled economics. This approach allows the TELRIC results to avoid the real world imperfections of demand and customer location forecasting encountered in the embedded network.

The scale of each engineering and construction job, for each cable route, is based on the same modeled assumption of perfect knowledge of customer locations and demand for each specific service at each of those locations. This introduces

[8] See Exhibit 2.1 CenturyLink

perfect efficiencies in the construction costs modeled and included in the TELRIC unit cost results that are far better than can be achieved in the real world embedded network. For example, along a common route, a real world embedded network will contain multiple feeder cables that were constructed over time using separate and distinct costs to construct each cable placed along that route. In contrast, CenturyLink's TELRIC results reflects the greater efficiency of a single feeder cable, constructed one time, and perfectly sized to meet the entire demand for customer locations and services corresponding to that feeder route reconstruction.

The combined use of precise wire center locations and boundaries, geo-coded customer locations, actual road networks and terrain features allow CenturyLink's TELRIC model to design, engineer and construct the most efficient cable route possible relative to those parameters and inputs. This degree of modeled efficiency again exceeds that which is possible and achievable in the embedded network which must be constructed based on forecasted service demand and customer locations which may never ultimately materialize.

CenturyLink's TELRIC methodology estimates forward-looking expenses based on the forward-looking network technologies and design, resulting in maintenance cost savings which are not achievable in the embedded network. The most obvious example of this is maintenance cost savings resulting from a greater use of lower cost fiber cable vs. higher cost embedded copper cable. Additionally

CenturyLink's TELRIC expense loading processes remove retail related costs and assumes an efficient level of wholesale services.

Thus, CenturyLink's TELRIC methodology and resulting UNE prices reflect numerous forward-looking efficiencies including network designs, least-cost technology, equipment sizing and pricing, optimal cable routing and scale of construction which far exceed that obtainable in the embedded network. The CLEC is thereby offered unbundled network elements at costs that are actually lower than the real world cost incurred by an ILEC. This approach and the resulting UNE prices comply fully with the FCC and ICC pricing requirements.

Q. Does the Geographic Module ("GM") process used to design the network result in forward-looking cost efficiencies?

A. Yes. The total loop distance influences the loop costs. The efficiency of the Geographic Module process is shown in Table 6 by comparing embedded to modeled cable sheath feet.

[Begin confidential]

Table 6

	Embedded Network	Cost Study Network	% Difference
Sheath Feet			

.

[End confidential]

The efficiency in cable sheath feet is the result of modeling to existing customers along minimum routes to the central office. CenturyLink's embedded cable footage has been built over many years of recurring forecasts of locations and customer demand for services. In contrast to this reality, the modeled network reconstructs the entire network as a single construction job with perfect knowledge of actual customer location and service demand at each location. The CenturyLink Geographic Module uses a minimum spanning tree algorithm that minimizes the total structure distance to connect customers to the central office. After all customers served directly from the central office have been identified, the remaining voice grade and DS1 customers are coded to be served from an optimally placed DLC. The Geographic Module performs an iterative process to place the DLC such that the maximum capacity of customer lines possible on a device is met within the distance constraint of 12,000 feet

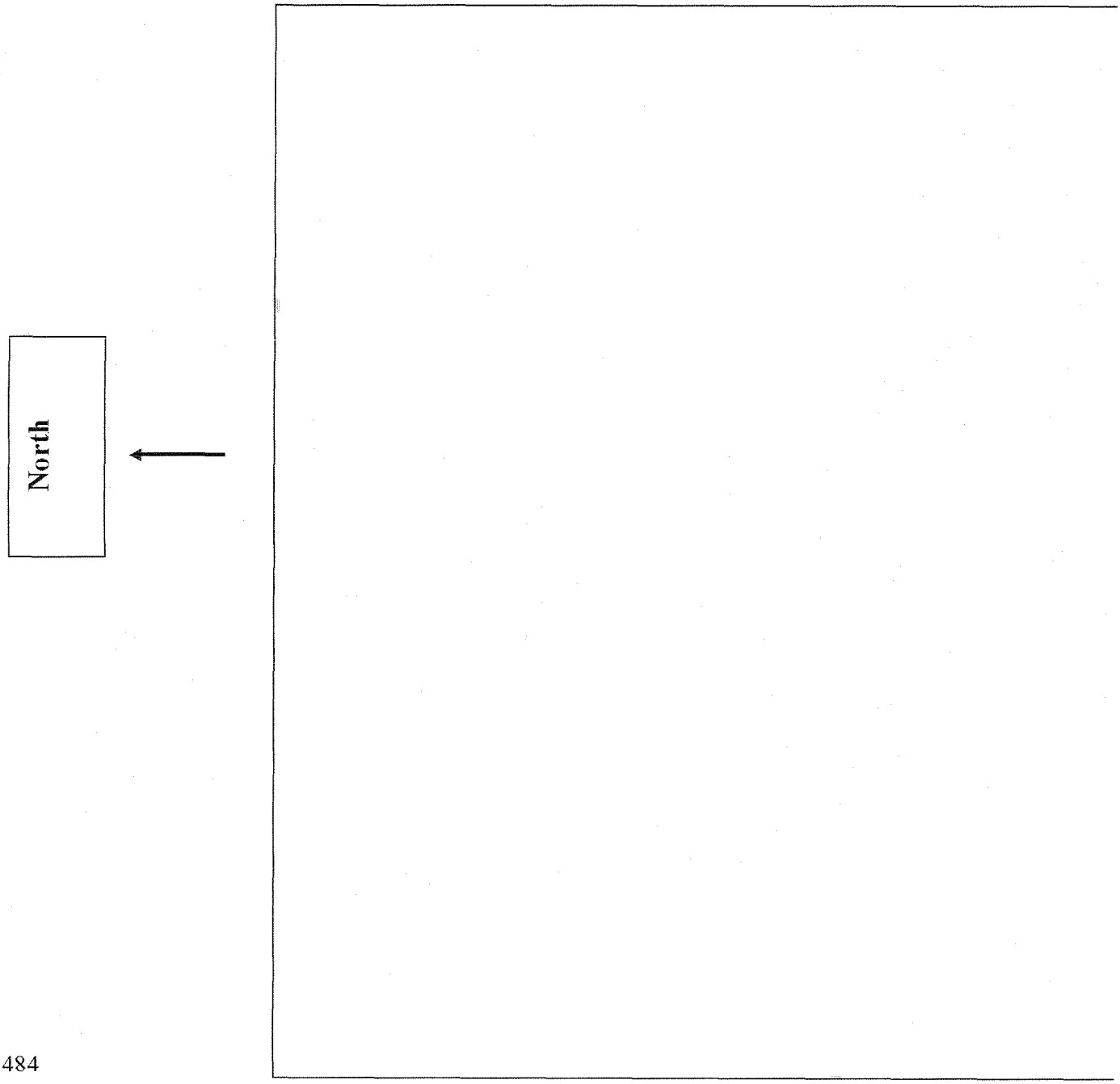
Q. Can you demonstrate the accuracy of the Geographic Module network design process?

A. Yes. The Figure A below is the GM result for CenturyLink's Dixon wire center. This is a pictorial representation from the MapInfo Software. In Figure B, I have taken the network design from the GM as shown in Figure A and layered the modeled network over a Satellite Image of the Dixon wire center Figure A, the modeled network, using actual customer locations, actual wire center boundaries, and actual road map information creates an efficient network design that aligns

with the real-world geography of Dixon. The GM process follows actual roads and routes around natural terrain barriers such as rivers and lakes located within the wire center boundaries. Figure C is a zoomed-in area of Dixon and further demonstrates the customer locations along actual roads and lakes and the efficient distribution network design to reach those customers.

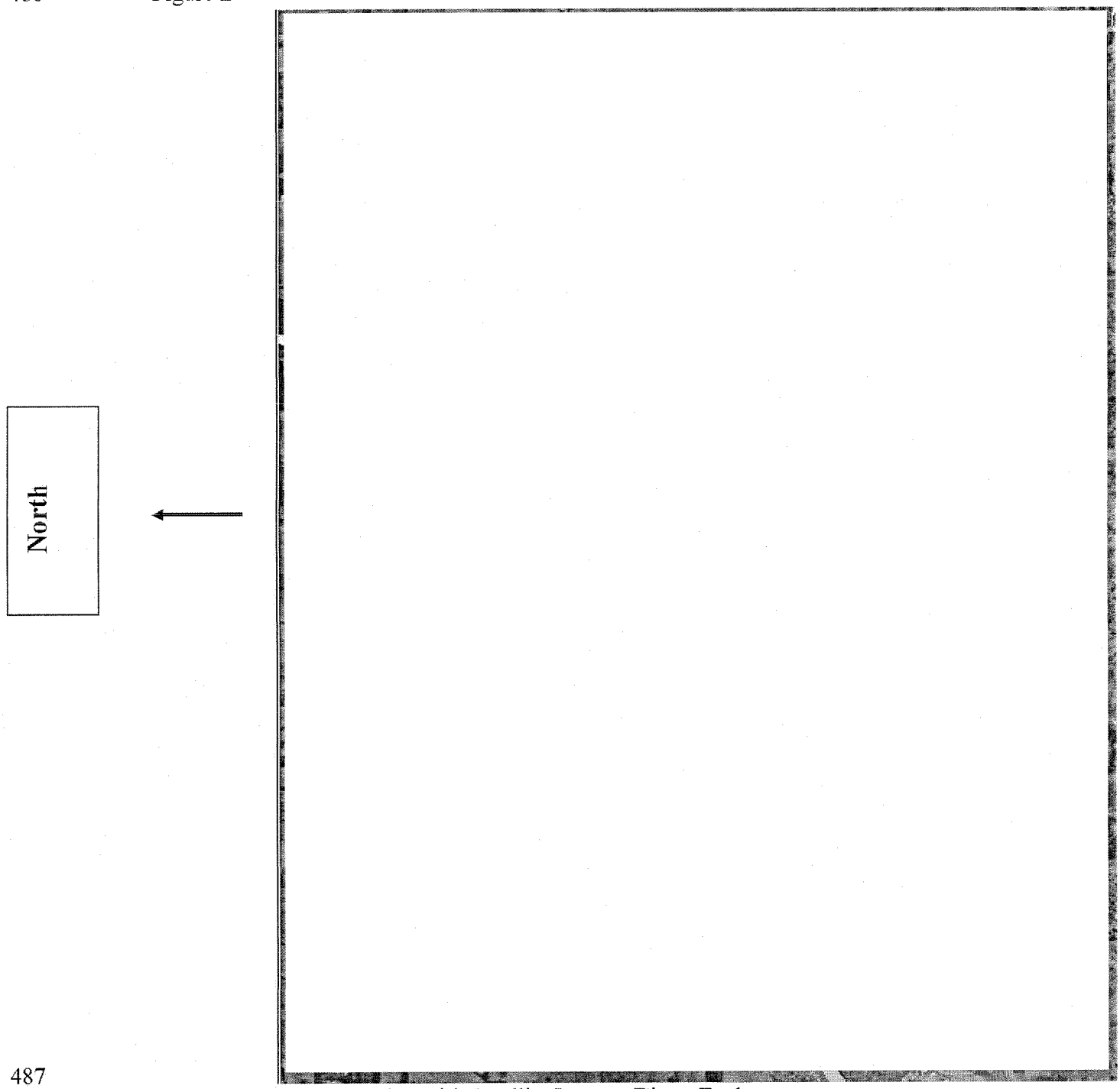
[Begin Confidential]

Figure A



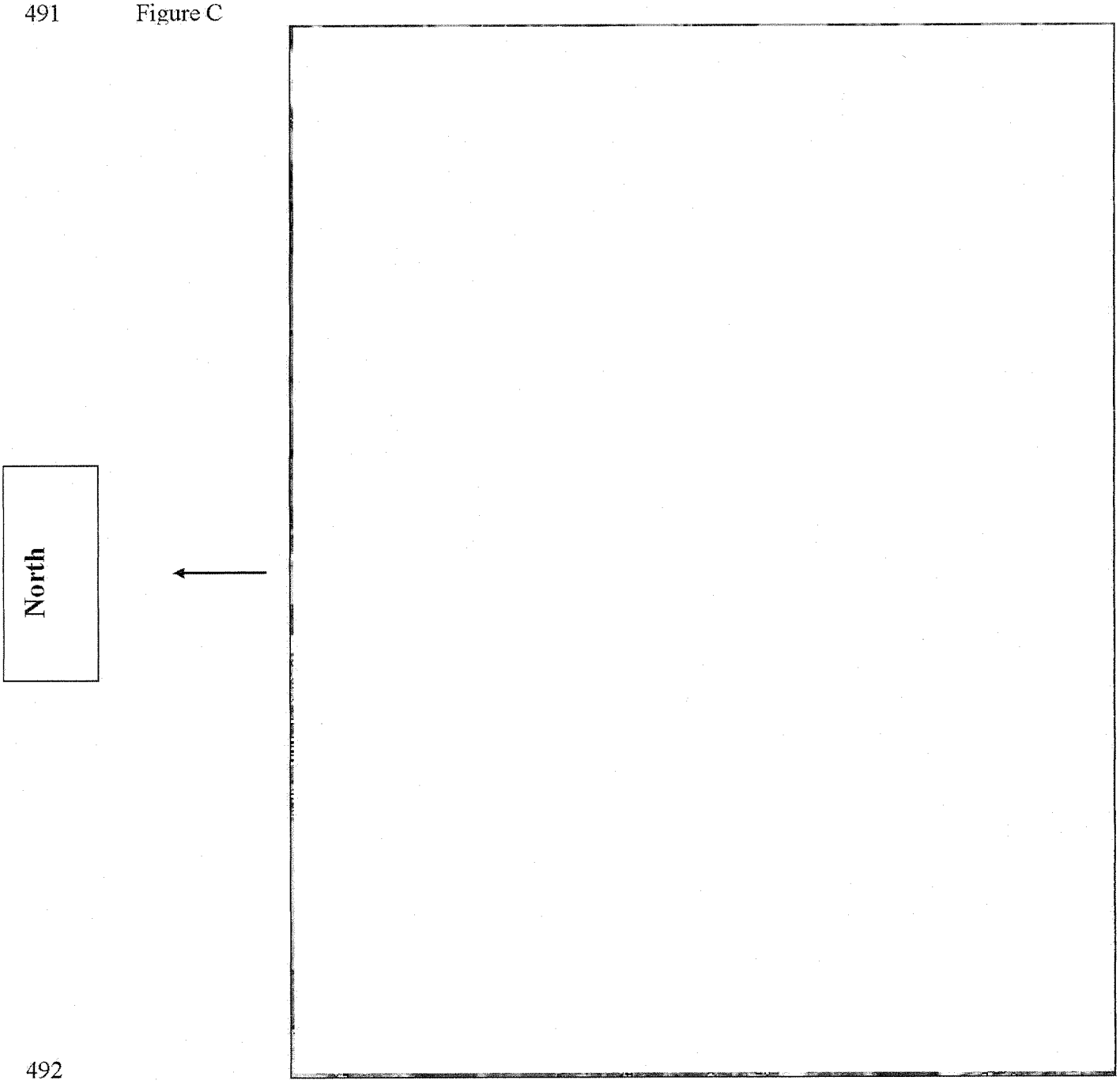
Geographic Module Output – Dixon Exchange

Figure B



GM Output overlay with Satellite Image - Dixon Exchange

Figure C



GM Output overlay with Satellite Image Zoom-In - Dixon Exchange

[End Confidential]

Q. **What evidence do you have that the CenturyLink TELRIC study results represent an efficient and forward-looking investment and therefore loop cost?**

A. CenturyLink's TELRIC model, using a forward-looking design and current material and labor prices, produces a total investment number for circuit and cable that is less than the actual booked investment in Illinois. The TELRIC modeled investment of **[Begin Confidential]** **[End Confidential]** is over **[Begin Confidential]** **[End Confidential]** than the 2010 actual book investment. This difference reflects the TELRIC modeled network design efficiencies and associated forward-looking cost savings predicted in the TELRIC network reconstruction. Another meaningful measure of the TELRIC modeled investment efficiencies underlying CenturyLink's loop prices, compares TELRIC investment to actual 2010 investment that has been indexed forward to current dollars using industry-standard Telephone Plant Index ("TPI")[9] factors. This comparison shows the cost study investment results in estimated efficiencies to be over **[begin confidential** **[end confidential]** the TPI indexed investment.

Table 7

[Begin Confidential]

[9] The AUS Telephone Plant Index (formerly the CA Turner Telephone Plant Index) is published by AUS Consultants. The index factors are developed based on the FCC Part 32 system of accounts.

A	B	C	D	E	F	G	H	I
Row	Description	TELRIC Investment	2010 Actual Investment	TELRIC - Actual Difference	% TELRIC to Actual	TPI Adjusted Book Inv	TPI - Actual Difference	% TELRIC to TPI
8	Circuit Equipment							
9								
10	Aerial Copper Cable							
11	Buried Copper Cable							
12	Ug Copper Cable							
13	Aerial Fiber							
14	Buried Fiber							
15	Ug Fiber							
16	Conduit							
17	Pole Lines							
18								
19	Total Investment							

514

515 **[End Confidential]**

516 Table 8 uses the AUS Telephone Plant Index to demonstrate the cost increases
517 over the last 5 years for installed circuit and cable. CenturyLink has experienced
518 cost increases, in particular for copper cable. However, the efficiencies of the
519 redesigned network along with the efficiencies CenturyLink drives as a
520 competitive company result in the just and reasonable TELRIC study prices.

521 Table 8

A	B	C	D	E
Row	Plant Type	Index 1/1/2005	Index 1/1/2010	Annual Increase over 5 years
7	Circuit Equipment	39	40	0.51%
8	Poles	506	586	3.16%
9	Aerial Copper Cable	386	499	5.85%
10	Aerial Fiber Cable	118	134	2.71%
11	Underground Copper Cable	340	462	7.18%
12	Underground Fiber Cable	95	108	2.74%
13	Buried Copper Cable	324	450	7.78%
14	Buried Fiber Cable	92	103	2.39%
15	Conduit systems	469	558	3.80%

522

523 Q. **Are you using any of the above AUS Telephone Plant Index (TPI) values in**
524 **your TELRIC study?**

525 A. No. To be clear, the CenturyLink TELRIC study uses current vendor material
526 costs and labor rates specific to CenturyLink's serving area. The TPI index is
527 simply one tool used to test that the results of the CenturyLink TELRIC model are
528 reasonable.

529 Q. **How does the installed cost per foot for cable and wire compare to the actual**
530 **book installed cost for cable and wire??**

531 A. As I have shown, the cost of construction for cable and wire has increased over
532 time. Generally, approximately 70-75 percent of cable wire construction is
533 installation from contractor and company labor. This cost category encompasses
534 skilled construction and electrician labor including benefits as well as the cost for
535 heavy machinery. In table 9 below, I show a comparison between 2010 actual
536 book cost per foot, CenturyLink's cost study cost per foot and where the TPI-
537 indexed cost per foot falls. The average annual increase is another indication of
538 the cost efficiencies in the study.

539 Table 9

540 **[Begin Confidential]**

Row		Cost Per Sheath Foot	Average Annual Increase
1	Embedded		
2	Modeled		
3	TPI		

541

542 **[End Confidential]**

Although current cost per foot is greater than historical cost per foot, the efficient model design actually produces lower overall investment as shown in Table 7 above.

Q. How does the cost study maintenance costs compare to CenturyLink's actual book maintenance?

A. I prepared Table 10 below which compares 2010 direct maintenance expenses to the cost study results.

Table 10

[Begin confidential]

	Embedded Network	Cost Study Network	% Difference
Maintenance Cost - Circuit, Cable & Wire			
Annual maintenance efficiencies			

[End confidential]

CenturyLink's cost study produces an **[Begin Confidential]** **[End Confidential]** in annual network maintenance expenses over that which CenturyLink experienced in Illinois in 2010. This resulting decrease to 2-Wire and DS1 Loop rates offered to CenturyLink's competitors is significant as it requires CenturyLink to achieve these levels of forward-looking efficiencies to compete.

REAL-WORLD FACTORS INFLUENCING LOOP COSTS

Q. What issues or attributes most affect UNE loop costs?

A. The cost of unbundled local loops varies on a geographic basis more than any other UNE defined by the FCC's First Report and Order. Numerous factors affect the cost of providing loops to specific customer locations. I will address customer density, loop distance, terrain, and weather.

1. Customer Density - Customer density is one of the single largest factors affecting the cost of local loops. Customer density is commonly expressed in terms of customers or access lines per square mile. The density of customers impacts loop cost in an inverse manner: the higher the customer density, the lower the cost of the local loop. This relationship is linked to a few fundamental issues, one of which is the requirement of building a trench, conduit, or aerial pole route regardless of whether a 25 pair or 2400 pair cable is placed. The greater the customer density, the more customers that can be served along a feeder or distribution cable route. Therefore, customer density ultimately determines how many customers or loops there are over which to spread the fixed costs associated with digging the trench, placing conduit, or placing an aerial pole line.

   Customer density also drives the unit cost of other equipment components associated with loops. Loop components such as Fiber Distribution Interfaces (FDIs), DLC devices, and Drop Terminals, for example, are all similarly affected by customer density and exhibit lower per unit costs as customer density increases.

2. Distance - The distance of a given customer location from the central office increases loop costs as the distance increases. The increased loop cost results from the need to place more feet of cable in trenches, conduit, or on aerial pole lines as the length of the loop increases. As distance increases, the need for, and overall cost of, maintenance generally increases. Assuming constant customer density, longer cables have more splice points resulting in greater exposure to risk such as possible failure due to lightning, water, rodents, vandalism, and accidents. CenturyLink's average loop length in Illinois is approximately **[begin confidential end confidential]**.

3. Terrain - The type of terrain in which cable is placed affects both the cost of the initial cable placement and the ongoing maintenance of that cable. The cost of below-ground cable construction increases as the presence of rock and the hardness of rock increases. Terrain factors such as the water table, slope of the ground, trees, and wetlands all affect the initial construction cost of loops and subsequent maintenance expense.

4. Weather – The extremes of weather affect the cost of maintaining cable and therefore influences the type of cable placed (buried, aerial or underground).

CenturyLink's Loop Module, in conjunction with CenturyLink's Illinois-specific input values, generates wire center cost estimates that reflect the geographic-specific impacts of all of the issues discussed above.

V. JUST AND REASONABLE PRICES

Q. Are the prices proposed by CenturyLink reasonable when compared to other ILECs UNE prices in Illinois?

A. Yes. I have prepared various analyses, which I have shared with NTS, to demonstrate the results of CenturyLink's study are reasonable.

First, stipulating the differences caused by the use of Verizon-specific costs, the following Table 11 shows CenturyLink's proposed prices vs. Verizon's approved UNE pricing in Illinois.

Table 11

	CenturyLink	Verizon
2-wire Loop	Monthly Price	Monthly Price
Band 1	$26.85	$21.13
Band 2	$52.83	$39.05
Band 3	$106.72	----
DS-1 Loop	Monthly Price	Monthly Price
Band 1	$121.97	$103.19
Band 2	$282.16	$198.29
Band 3	$618.79	----

Q. Why is a comparison with Verizon pricing a fair test of reasonableness?

A. Loop density (loops per sq. mile) is one of the largest factors affecting cost. Table 12 below demonstrates where CenturyLink's service area ranks for the entire state of Illinois as far as area and loops served and the density of the loops per sq. mile. Verizon's service area in Illinois is the closest to CenturyLink's service area when comparing the loop density.

Table 12 [10]

Illinois Loop Density by Carrier

Carrier	AREA *	LOOPS **	Loops/SqMi	EXCH ***
AT&T	11,705	5,453,444	465.9	280
Verizon	23,091	648,904	28.1	372
Windstream	2,053	29,373	14.3	43
Citizens/Frontier	7,965	119,580	15.0	110
Fairpoint	654	3,985	6.1	8
Consolidated	2,684	68,614	25.6	34
Gallatin River Comm.	1,251	60,185	48.1	22
Other	6,834	84,235	12.3	46
Total	56,236	6,468,320	115.0	915

Q. What other analysis have you prepared to validate that the Illinois pries are reasonable?

A. I compared the wire center cost for Pekin with current approved costs in other CenturyLink states. I focused on Pekin specifically as NTS purchases the highest

[10] Source Date: * Area from 2008 Business Location Research ("BLR") data;
** Loops - http://www.usac.org/about/governance/fcc-filings/2008/quarter-3.aspx;
*** Exch-http://www.universalservice.org/hc/tools/wctozone/IASWCToZoneSearch.aspx

number of 2-wire UNE loops in this wire center. Table 13 below demonstrates the results for Pekin are reasonable. I would expect the unit costs shown below to be higher if updated today. Not only have costs increased (as shown in Table 7 above) but the units over which to determine the per-unit costs have decreased.

Table 13

[Begin Confidential]

A	B	C	D	E	F	G	H
Row	State/Study Area	Total Wire Centers:	Largest Wire Center Line Count	Smallest Wire Center Line Count	Average Cost for Wire centers from lines	Cost Study Data Vintage	Notes
8	Illinois						Pekin wire center costs
9	Florida						16 of the 133 wire centers
10	North Carolina - CTT						10 of the 157 wire centers
11	North Carolina - Central						2 of the 45 wire centers
12	Ohio						6 of the 173 wire centers
13	Texas-United						2 of the 59 wire centers

End Confidential

Q. Are the 2-wire unbundled loop rates for AT&T instructive?

A. No, not in attempting to analyze CenturyLink's 2-wire unbundled loop costs. As shown in Table 5, the loop ratio for AT&T to CenturyLink is 91:1. This means that on average, AT&T has 91 loops over which to recover costs to CenturyLink's single loop. Density is a significant driver of per-unit cost. In addition, the count of wire centers for AT&T to calculate a weighted average into 3 bands makes a vast difference in the final banded costs.

651 Q. **Can you further explain why the count of wire centers makes a difference in**
652 **the final rates by band?**
653 A. Yes. The mathematical work of averaging means some data points (wire center
654 costs in this instance) will be higher and some will be lower. Moreover,
655 weighting the average will result in the final average being closer to the data point
656 with the highest weight. Since density is a significant driver of costs and there is
657 an inverse relationship between costs and loops, the wire centers with the lowest
658 line counts tend to have the highest costs but also weight lower in the final
659 banding. AT&T has 236 wire centers to average their Access Area C (Rural)
660 across, which includes Bartonville as well as Joliet, Arlington Heights, and
661 Chicago Heights.

662 Q. **You stated that CenturyLink's Band 1 DS1 Loop proposed rate is $121.97**
663 **and that NTS currently has a rate of $181.51 and the Band 1 2-wire Loop**
664 **proposed rate is $26.85 and NTS currently has a rate of $17.93 Can you**
665 **reconcile the change in rates?**
666 A. No. I understand from NTS there was no cost study prepared in support of the
667 rates in the prior agreement. Absent a cost study, NTS agreed to a $17.93 2-wire
668 loop cost in 2006 but today, 5 years later proposes an unsupported 30% decrease
669 to $12.50.

670

671 Q. **Do you have other data that demonstrates the rates produced by**
672 **CenturyLink's most current cost study are just and reasonable?**

A. Yes. The following Table 14 compares the current TELRIC study rates with the results from the 1998 Federal HCPM results. After 13 years of cost increases and declining demand, the current TELRIC rates are just and reasonable when compared with the old HCPM results.

Table 14

[Begin Confidential]

A	B	C	D	E	F	G	H
			1998 Federal HCPM			CenturyLink Model	
Row	Clli	Name	Total Lines	Total Monthly Loop Cost Per Line		Total Lines	Total Monthly Cost Per Line
11	GLBGILXD	Galesburg					
12	PEKNILXD	Pekin					
13	DIXNILXA	Dixon					
14	HAVNILXD	Havana					
15	SVNNILXA	Savanna					
16	KNVLILXD	Knoxville					
17	NPKNILXN	North Pekin					
18	MTCAILXA	Mount Carroll					
19	MANTILXD	Manito					
20	LACNILXD	Lacon					
21	SPKNILXS	South Pekin					
22	GRDTILXA	Grand Detour					
23	AVONILXD	Avon					
24	THSNILXA	Thomson					
25	NLSNILXA	Nelson					
26	WATGILXD	Wataga					
27	TLBTILXD	Talbott					
28	TPKAILXD	Topeka					
29	GNVYILXD	GRN Vly					
30	FRCYILXD	FRST City					
31	CMRNILXD	Cameron					
32	HRMNILXA	Harmon					

[End Confidential]

681

682 Q. **In NTS's letter of July 28, 2011, NTS asserts CenturyLink's UNE loop price**
683 **should "...come in significantly lower than CenturyLink's retail price..."**
684 **Would you consider a comparison of the TELRIC 2-wire loop price with the**
685 **CenturyLink retail prices a test for reasonableness in Illinois?**

686 A. No. There is no comparable relationship between the forward-looking UNE costs
687 and the CenturyLink retail tariff rate for a stand-alone line. The CenturyLink
688 retail tariff prices were set through a long history of regulatory structure designed
689 to ensure universally affordable rates. In contrast, the cost of a 2-wire local loop
690 is developed using the federally mandated forward-looking network design and
691 current material and labor rates. The investment required to build each 2-wire
692 local loop is the same regardless of what services are provided on that 2-wire
693 local loop. The 2-wire local loop may be sold as a local loop bundled with retail
694 residential services or can be sold as a local loop bundled with a set of business
695 services. The investment in the local loop built by CenturyLink allows
696 CenturyLink to market and sell features, enhancements, and other value-added
697 services to the end-user customer. If a CLEC purchases a UNE 2-wire loop from
698 CenturyLink, that CLEC has the same opportunities to increase its revenue from
699 that customer including the Federal Subscriber Line Charges, intrastate switched
700 access, interstate switched access. NTS is a certificated IXC in Illinois as well
701 and has the benefit of selling those services to their end-user customers.

702

703 Q. **Are there other methods NTS can use to deliver services to its customers?**

A. Yes. NTS always has the option to invest its own funds to build its own facilities to its customers. Alternatively, NTS can deliver its services over loops purchased from CenturyLink at retail rates using the wholesale resale discount available to NTS. The resale discount allows NTS to provide its own marketing, billing, collections and other costs, that are avoided by CenturyLink when retail services are provided to wholesale carriers for resale.

Q. In the NTS letter of July 28, 2011, it is erroneously asserted that CenturyLink included the "entire retail costs" in the UNE loop study. Can you describe what the model does and what remains in the cost for a UNE loop pertaining to product management, sales, advertising and customer service expenses?

A. Yes. The model process takes the forward-looking expenses for wholesale product management, sales, advertising and customer service and divides by the cost of the total network. Conceptually, what remains in the cost study is the forward-looking cost of these services as if the entire network is sold as wholesale. Prior to removing the retail operations expenses, the cost per loop for these functions is **[begin confidential] [end confidential],** the cost for these functions per loop for a wholesale loop is **[begin confidential] [end confidential]**.

CENTURYLINK'S PRICES FOR 2-WIRE AND DS1 LOOPS

Q. Please explain why there are multiple rate bands for 2-wire and DS1 UNE Loops.

A. One of the FCC's UNE pricing rules requires UNE loop rates to reflect a minimum of at least three different cost-related zones.[11] That is, UNE loop rates, including 2-wire and DS1 loops, must be broken down into at least three different rate bands that reflect the differences in costs in different geographic areas.

Q. What guidance did the 1996 Telecommunications Act and the FCC provide on de-averaging?

A. The 1996 Telecommunications Act Section 252 (d) (1) requires rates based upon cost. The FCC addressed the issue of de-averaging cost disproportions in Rule 47 CFR 51.507 General Rate Structure Standard, which states:

> (f) State commissions shall establish different rates for elements in at least three defined geographic areas within the state to reflect geographic cost differences.

[11] *First Report and Order* ,765 ("We conclude that three zones are presumptively sufficient to reflect geographic cost differences in setting rates for interconnection and unbundled elements, and that states may, but need not, use these existing density-related rate zones. Where such systems are not in existence, states shall create a minimum of three cost-related rate zones to implement deaveraged rates for interconnection and unbundled elements.")

Q. **How did CenturyLink de-average its forward-looking unbundled 2-wire and DS1 loop rates?**

A. CenturyLink has de-averaged using 3 rate bands as the federal guidelines require. CenturyLink's method of de-averaging results in a degree of price de-averaging that achieves an acceptable relationship between the price charged for that geographic specific UNE and its forward-looking cost. The method compares each wire center's 2-wire unbundled loop cost to the statewide average 2-wire unbundled loop cost. CenturyLink performs the following steps:

1. Compute the percentage difference of the wire center from the statewide average.

2. For all wire centers where the cost is less than 25 percent below the statewide average of **[begin confidential end confidential]** place in Band 1. Using line counts, find the weighted average cost within this band. Band 1 includes 4 wire centers and 70 percent of CenturyLink's 2-wire loops in Illinois. Using this weighted average approach, the price for an unbundled 2-wire loop in Band 1 is $26.85 and **[begin confidential end confidential]** percent below the statewide average.

3. For those wire centers with a cost percentage between negative 25 percent of the statewide average and up to 50 percent above the statewide average place in Band 2. Using line counts, find the weighted average cost within this band. Band

2 includes 4 wire centers and 12 percent of CenturyLink's 2-wire loops in Illinois with the Band 2 weighted average of $52.83.

4. For those wire centers with a cost percentage greater than 50 percent above the statewide average, place in Band 3. Using line counts, find the weighted average cost within this band. This includes 14 wire centers and 16 percent of CenturyLink's 2-wire loops in Illinois with the Band 3 weighted average of $106.72.

Q. What rates should the Commission adopt for 2-wire Loops and DS1 Loops?

A. The Commission should adopt the 2-wire Loop and DS1 Loop rates as shown in Table 1 above.

Q. Please summarize your testimony?

A. The prices found in Table 1 above and produced by CenturyLink's Cost Study are TELRIC compliant. I have demonstrated the justness and reasonableness of the prices in Table 1 with multiple comparisons to other prices and network metrics. I have produced a large volume of work product to demonstrate that CenturyLink has followed the TELRIC methodology required by the FCC for purposes of setting rates for UNE loops. I have shown:

- The TELRIC Investment produced by the CenturyLink cost study is **[Begin Confidential]** **[End Confidential]** less than current embedded investment and well below a telephone cost indexed replacement investment amount.

- The sheath feet in the reconstructed forward-looking network is **[Begin confidential]** **[End confidential]** than found in the embedded network
- The forward-looking maintenance costs produced in the study is **[Begin confidential]** **[End Confidential]** than CenturyLink's current actual amounts
- For comparative purposes, by far CenturyLink's density looks closer to Verizon's legacy properties than AT&T
- The wire center level cost results for CenturyLink's Illinois property are within a reasonably comparable range to Commission reviewed and approved costs in other states as well as Verizon rates in Illinois.

Q. Does this conclude your testimony?

A. Yes

STATE OF Kansas)
)
COUNTY OF Johnson)

VERIFICATION

I, Christy Londerholm, do on oath depose and state that the facts contained in the foregoing Direct Testimony of Christy Londerholm on Behalf of Gallatin River Communications, L.L.C. d/b/a CenturyLink are true and correct to the best of my knowledge and belief.

Christy V. Londerholm
CHRISTY LONDERHOLM

SIGNED AND SWORN TO BEFORE ME THIS 16th day of August, 2011.

Linda K. Joseph
Notary Public

My Commission expires:
October 19, 2014

NOTARY PUBLIC STATE OF KANSAS | LINDA K. JOSEPH My Appt. Exp. 10/19/14